

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-9 (Canceled).

10. (Currently Amended) A method for localizing one or more sources, each source (emitters) being in motion relative to a network of sensors, the method comprising the steps of:

separating the sources in order to identify the direction vectors associated with the response of the sensors to a source at a given incidence, said incidence angles varying depending [[to]]on the position of the sensors network of relative to said sources;

associating direction vectors $a_{1m} \dots a_{Km}$ obtained for the m^{th} transmitter and respectively at the instants $t_1 \dots t_K$, are associated during a period Dt in order to separate the different sources for each instant $t_1 \dots t_K$, said incidence angles varying depending [[to]]on the position of the sensors network of relative to said sources;

wherein the direction vectors $a_{1m} \dots a_{Km}$ obtained for the mobile sources and respectively for the instants $t_1 \dots t_K$ are associated during a period Dt in order to separate the different sources for each instant $t_1 \dots t_K$, the position (x_m, y_m, z_m) of the mobile emitter is directly localized from the vectors $a_{1m} \dots a_{Km}$ associated to a same emitter, one emitter being obtained from the different instants $t_1 \dots t_K$.

11. (Currently Amended) The method according to claim 10, wherein the associating step comprises:

Step ASE – 1 : Initialization of the process at $k=2$.

Step ASE – 2 : For $1 \leq m \leq M$ determining the indices $i(m)$ in using the relationship $d(a_{km}, b_{i(m)}) = \min_{1 \leq j \leq M} [d(a_{km}, b_j)]$, the vector $a_{k,m}$ and the vectors b_i identified at the instant t_{k+1} for $(1 \leq j \leq M)$, setting up a function $\square_m(t_k) \beta_m(t_k) = d(a_{k,m}, a_{om})$, wherein $d(u, v) = 1 -$

$$\frac{|u^H v|^2}{(u^H u)(v^H v)}$$

Step ASE – 3 : For $1 \leq m \leq M$ performing the operation $a_{k+1, m} = b_{i(m)}$,

Step ASE – 4 : Incrementing $k \leftarrow k+1$ and if $k < K$ returning to the step ASE-1,

Step ASE – 5 : Starting from the family of instants $\square = \{t_1, \dots, t_K\}$ $\Phi = \{t_1, \dots, t_K\}$ thus obtained, extracting the instants t_i which do not belong to a zone defined by the curve $\square_m(t_k) \beta_m(t_k)$ and a zone of tolerance;
where M is the number of transmitters.

12. (Previously Presented) The method according to claim 10, wherein the localizaing step comprises:

a normalized vector correlation $L_K(x, y, z)$ maximizing in the space (x, y, z) of the position of a transmitter with

$$L_K(x, y, z) = \frac{|b_K^H v_K(x, y, z)|^2}{(b_K^H b_K)(v_K(x, y, z)^H v_K(x, y, z))}$$

with

$$b_K = \begin{bmatrix} b_{1m} \\ \vdots \\ b_{Km} \end{bmatrix} = v_K(x_m, y_m, z_m) + w_K, \quad v_K(x, y, z) = \begin{bmatrix} b(t_1, x, y, z) \\ \vdots \\ b(t_K, x, y, z) \end{bmatrix}$$

$$\text{and } \mathbf{w}_K = \begin{bmatrix} \mathbf{w}_{1m} \\ \vdots \\ \mathbf{w}_{Km} \end{bmatrix}$$

where \mathbf{w}_K is the noise vector for all the positions (x, y, z) of a transmitter; and wherein the vector \mathbf{b}_K comprises a vector representing the noise, the components of which are functions of the components of the vectors $\mathbf{a}_{1m} \dots \mathbf{a}_{Km}$.

13. (Canceled)

14. (Previously Presented) The method according to claim 12, wherein comprising:

a step in which the matrix of covariance $\mathbf{R} = \mathbf{E}[\mathbf{w}_K \mathbf{w}_K^H]$ of the noise vector is determined and in that the following criterion is maximized :

$$L_K'(x, y, z) = \frac{|\mathbf{b}_K^H \mathbf{R}^{-1} \mathbf{v}_K(x, y, z)|^2}{(\mathbf{b}_K^H \mathbf{R}^{-1} \mathbf{b}_K)(\mathbf{v}_K(x, y, z)^H \mathbf{R}^{-1} \mathbf{v}_K(x, y, z))}$$

Where \mathbf{v}_x is a speed vector and \mathbf{b}_k is vector for source separation and source identification.

15. (Previously Presented) Method according to claim 14, wherein the evaluation of the criterion $L_K(x, y, z)$ and/or of the criterion $L_K'(x, y, z)$ is recursive.

16. (Previously Presented) The method according to claim 14, wherein it comprises a step of comparison of the maximum values with a threshold value.

17. (Previously Presented) The method according to claim 11, wherein the value of K is initially fixed at K_0 .

18. (Previously Presented) The method according to claim 10, wherein the transmitters to be localized are mobile and in that the vector considered is parameterized by the position of the transmitter to be localized and the speed vector.